

XX. *Characters of Hookeria, a new Genus of Mosses, with Descriptions of Ten Species.* By James Edward Smith, M.D. F.R.S. P.L.S.

Read April 5, 1808.

SINCE the publication of a paper on the *Generic Characters of Mosses, and particularly of the Genus Mnium*, in the 7th volume of our Transactions, an excellent treatise on the same subject, more especially respecting *Orthotrichum* and *Neckera*, by Dr. Mohr of Kiel, has appeared in the last fasciculus of the *Annals of Botany*, of Dr. Sims and Mr. Konig; a publication whose discontinuance I always find fresh reason to lament, whatever botanical subject I touch upon. The able cryptogamist, to whom we are obliged for this treatise, tries all the genera of which he has occasion to speak, by the Linnæan rule "*genus dabit characterem*," and the result is no less in favour of his acuteness than of the excellence of the rule. In order to characterize genera which nature shows by their habit to be distinct, he has paid more attention to the form and structure of the *calyptra* than any preceding writer, and I think with good success. He expresses some "doubts of the propriety of having recourse to the form and structure of the capsules of mosses in forming their generic characters," lest it should "oblige us to divide *Polytrichum* and other genera into several new ones, and to make more such unnatural alterations." In answer to this, I beg leave to remind him of the rest of the Linnæan rule, that

that "*the character is not to make the genus;*" a maxim no less important than the other, as guarding against the division of a natural genus, on account of any character whatsoever, and to which Dr. Mohr's own practice is all along no less correctly conformable than to the former part of the said law.

The genus which I have now to propose comprehends, among other species, two mosses never suspected hitherto of being congeners, but both in habit so strikingly alike, that no plants could be expected to form a more natural genus. These are the *Hypnum lucens* of Linnæus, and the *Anictangium bulbosum* of Hedwig. I have hinted in the *Flora Britannica* that the former of these might, even upon the principles of Hedwig, constitute a genus; for in the only dried capsule which I could then afford to dissect, I found the teeth of the inner *peristomium* so short, as to differ greatly in that respect from every Hedwigian *Hypnum* or *Leskea*; but this arose from a partial cohesion. In copious living specimens, brought last February by Mr. W. J. Hooker from bogs near Holt, I have had an opportunity of examining every part of this curious and beautiful moss at leisure. I have, under the microscope in a warm room, seen the fringes in every stage of expansion, and closing suddenly on the admission of moisture, and I find the inner one divided about half way down into 16 regular equal perforated teeth, as in many *Leskeæ*, though far less deeply than in others. This inner membranous fringe is so strongly plaited, that the lower parts of the teeth, in a dry state, often approach one another so as to seem united. Perhaps such a partial cohesion gave an irregularity to its appearance, and induced Dr. Schwægrichen, the editor of the *Species Muscorum*, to make it a *Hypnum*, not a *Leskea*, which last, according to the generic rules of Hedwig, I now find it ought to be. Hedwig appears never to have examined the fructification

tification of this plant at all, though he has figured the leaf with its remarkable terminal radicles. With regard to his *Anictangium bulbosum*, this illustrious muscologist has himself made a greater mistake, in consequence of the young state of the capsules which it fell to his lot to examine, and which seem in that respect much like some preserved in the Linnæan herbarium. In these he could find no fringe, and therefore referred the plant to his *Anictangium*. I had lately however the pleasure of receiving some more perfect ones from my friend Labillardiere, who has figured this moss in his work on New Holland plants, t. 253. f. 1, by the name of *Leskea pennata*. In these specimens the *peristomium* is sufficiently apparent, and is that of a *Leskea*. Thus these two plants are brought together under one genus, my *Hypnum*. We must next examine how they may together be separated from thence in order to constitute a genus by themselves, which the striking peculiarity of their habit so imperiously requires. This, I think, may with certainty be done, both according to my principles founded on the capsule, as in *Mnium* and *Bartramia*, and according to those of Dr. Mohr, derived from the *calyptra* or veil.

The capsule of both these mosses is all over curiously reticulated or dotted, in a different and more remarkable manner than that of any *Hypnum* known to me. This I think will afford one generic mark. The *calyptra* may, by most botanists, be thought to yield a better distinction, being not only most curiously reticulated, so as in a dry state to be in every part cellular, which I have not seen in any other moss, but it moreover comes off entire, never splitting longitudinally like that of every genuine *Hypnum* that I have had an opportunity of examining. I have not indeed seen this part in all the exotic species hereafter mentioned, but I have no apprehension of its being materially different

ferent from the English one, all other parts of their fructification, as well as habit, agreeing so well as they do.

I have great pleasure in dedicating this genus to my young friend Mr. William Jackson Hooker of Norwich, F.L.S., a most assiduous and intelligent botanist, already well known by his interesting discovery of *Buxbaumia aphylla*, as well as by his scientific drawings of *Fuci* for Mr. Turner's work; and likely to be far more distinguished by his illustrations of the difficult genus *Jungermannia*, to which he has given peculiar attention. The reticulated habit of this his favourite genus accords with what is most remarkable in my *Hookeria*.

To the 2 species already mentioned I am enabled by Mr. Menzies's bounty to add 6 more, as well as 2 from the Linnæan herbarium, of all which I beg leave to offer the following generic and specific characters.

HOOKERIA.

CRYPTOGAMIA *Musci*.

Capsula ovata, reticulato-punctata, e perichætio squamoso, laterali. *Peristomium* exterius dentibus sedecim: *interius* membranaceum, sedecim-dentatum. *Calyptra* celluloso-reticulata, integra.

1. *HOOKERIA lucens*, foliis trifariis ellipticis uniformibus integerrimis enervibus.

H. lucens. *Engl. Bot. t.* 1902.

Hypnum lucens. *Linn. Sp. Pl.* 1589. *Sm. Fl. Brit.* 1293.

Hedw. Fund. v. 1. 13. *t.* 1. *f.* 4—6. *Sp. Musc.* 243. *Hoffm.*

Germ. v. 2. 56. *Ehrh. Crypt.* 5.

H. pennatum aquaticum lucens, longis latisque foliis. *Dill. Musc.* 270. *t.* 34. *f.* 10.

Angl. Shining Hookeria.

In udis umbrosis et palustribus. *γ*.

Most frequent in the northern counties of England. *Dill.* In dark shady woods in Scotland, but not common. *Lightf.* In Sussex. *Dickson.* On Holt heath, Norfolk, in wet places among grass. *Mr. W. J. Hooker.* At Islington near Dartmoor, Devonshire. *Miss Filmore.* In Germany. *Ehrhart,* and *Weber.* At Nootka sound, on the west coast of North America. *Mr. A. Menzies.*

Herba succosa, tenerrima, glaberrima, pellucida, pallidè vi-rens. *Caules* biunciales, cæspitosi, adscendentes, radican-tes, simplices vel ramosi, undique foliosi, teretes. *Folia* verticalia, laxè imbricata, subdisticha, at triplici serie plerumque digesta, sessilia, elliptica, obtusiuscula, plana, integerrima, avenia, et enervia, un-dique pulcherrimè reticulata, interstitiis oblongiusculis; apice quandoque radican-tes. *Perichætia* lateralia, solitaria vel gemina, foliolis ovatis, acuminatis, enervibus, concavis. *Pedicelli* solitarii, erecti, foliis quintuplò longiores, rubri, basi bulbosi, apiceque pau-lulùm incrassati. *Capsula* plùs minùs cernua, ovata, brevis, saturatè fusca, nitida, undique concinnè reticulato-punctata. *Operculum* longitudine ferè capsulæ, subulatum, rectiusculum, reticulatum, rufum, basi fimbriatum et annulatum. *Peristomium exterius* e den-tibus 16, basi latioribus, extùs fulvis, intùs crebrè denticulatis: *interius* membranaceum, reticulatum, plicatum, pallidè fuscum sive lutescens, ad medium usque æqualitèr dentatum, dentibus 16, subulatis, carinatis, pertusis, emarginatis. *Calyptra* vix oper-culo major, ampullaceo-conoidea, recta, mucronulata, albida, undique pulchrè reticulata, siccitate cellulosa; basi crenulata, at semper indivisa, et integra e fructu maturo secedens.

2. *H. quadrifaria*, foliis quadrifariis obovatis subintegerrimis uninervibus; intermediis utrinque brevioribus adpressis.

TAB. XXIII. Fig. 1.

In Australasiâ. ۲.

At Dusky bay, New Zealand. *Mr. A. Menzies.*

Caules triunciales, subdivisi, adscendentes, undique foliosi. *Folia* quadrifariam imbricata, obovata, obliqua, mutica, ferè integerrima, vel apice tantùm aliquatenùs denticulata, pulcherrimè reticulata, interstitiis orbiculatis, ultrà medium uninervia, nervo subindè bifurco; majora distichè patentia; minora duplò breviora, rotundiora, adpressa, subalterna, seriem intermediam utrinque constituentia. *Perichætia* axillaria, solitaria, foliolis lanceolatis. *Pedicelli* solitarii, erecti, foliis sextuplò longiores, atro-purpurei, basi bulbosi. *Capsula* cernua, atro-purpurea, angustè ovata, ore dilatata, undique reticulato-punctulata. *Peristomium exterius* aureum: *interius* citrinum. *Operculum* et *calyptra* mihi ignota, nec peristomii structura ex unico exemplari erui potuit.

A, A. *Folia* quadruplò aucta.

3. *H. pennata*, foliis trifariis mucronulatis serrulatis; intermediis duplò brevioribus orbiculatis; reliquis lanceolatis pedicellos superantibus.

Leskea pennata. *Labillardiere Nov. Holl. t. 253. f. 1.*

Anictangium bulbosum. *Hedw. Sp. Musc. 43. t. 6. f. 1—5.*

In Australasiâ. ۲.

In New Holland. *M. Labillardiere.* At Dusky bay, New Zealand. *Mr. A. Menzies.*

Radices implexæ, repentes, densè tomentosæ, nigro-ferrugineæ,

neæ, nequaquàm bulbosæ. *Caules* 3- aut 4-unciales, plerumque simplices, rariùs bifidi, erecti; basi denudati, nigri, nitidi; supernè foliosi. *Folia* verticalia, laxè imbricata, trifaria; serierum duarum oppositarum disticha, patentissima, lanceolata, inæquilatera, basi uninervia; seriei intermediæ longè minora, arctè adpressa, orbiculata, Jungermanniarum quarundam auriculas simulantia; omnia pellucida, nitida, tenuissimè reticulata, mucronulata, apicem versùs serrulata. *Perichætia* lateralialia, solitaria, e foliorum majorum axillis, foliolis lanceolatis, angustis. *Pedicelli* basi insignitè bulbosi, solitarii, arcuato-deflexi, fulvi, nitidi, foliis majoribus breviores. *Capsula* latè ovata, undique punctulato-reticulata, ferruginea. *Peristomium* exterius fulvum; interius flavum. *Operculum* capsulâ brevius, basi conicum, apice tenuissimè subulatum. *Calyptra* mihi ignota*.

4. *H. filiculiformis*, ramis fasciculatis tripinnatis, foliis ovatis trifariis complanatis integerrimis enervibus; intermediis parùm minoribus.

Leskea filiculiformis. *Hedw. Sp. Musc.* 213. t. 50.

In plagis australioribus. 4.

Radix repens, longissima, tortuosa, villosa, fusco-nigra. *Caules* sparsi, erecti, biunciales, simplicissimi, teretiusculi, læves, nudi, apice ramosissimi; ramis fasciculatis, radiatis, complanatis, flabelliformibus, tripinnatis, undique foliosis. *Folia* saturatè viridia, numerosissima, minima, trifaria, distichè complanata, cordato-ovata, acuminata, integerrima, enervia; intermedia reliquis vix minora, arctè adpressa. *Perichætia* subconferta, foliolis majoribus, concavis, carinatis, et, ni fallor, uninervibus. *Pedi-*

* Mr. R. Brown informs me that the *calyptra* of this species, which he has gathered in New Holland, agrees with that of *H. lucens*.

cellus uncialis, ruber. *Capsula* pendula, ovata, fusca, insignitè reticulata. *Operculum* non vidi, neque *calyptram*.

5. *H. tamariscina*, ramis fasciculatis, foliis obliquis trifariis serratis uninerviis; intermediis triplò minoribus ovato-lanceolatis.

Leskea tamariscina. Hedw. *Sp. Musc.* 212. t. 51. f. 1—7.

Hypnum tamarisci. Swartz. *Prod.* 141.

In plagis australioribus. γ .

In Jamaica. Dr. Swartz. At the Cape of Good Hope. Mr. A. Menzies.

Radix repens, villosa, nigra. *Caules* sparsi, erecti, unciales, nudiusculi, apice ramosi; ramis fasciculatis, patulis, subdivisis, haud uncialibus, undique foliosis. *Folia* lætè viridia, reticulata, trifaria, ovata, acuminata, serrata, ultrà medium uninervia, omnia siccitate torta; majora obliqua, basi integerrima; intermedia triplò minora, undique serrata, æquilatera. *Setas* intermedias ab Hedwigio depictas frustrà quæсивimus. *Perichætia* subconferta, foliolis ovatis, acuminatis, concavis, integerrimis. *Pediceilus* haud uncialis, ruber. *Capsula* pendula, ovata, pulchrè reticulata. *Operculum* subulatum, longitudine capsulæ, basi convexum. *Calyptra* reticulata, flavicans, in unico nostro exemplari, casu forsitan, lacera.

6. *H. rotulata*, ramis fasciculatis, foliis trifariis serratis uninerviis; intermediis duplò minoribus orbiculatis basi integerrimis.

Leskea rotulata. Hedw. *Sp. Muse.* 213. t. 51. f. 8—13.

In Australasiâ. γ .

In New Zealand. Mr. A. Menzies.

Habitus præcedentis. *Folia* pallidiora, tenuiùs reticulata, latiora, et vix obliqua; intermedia haud duplò minora, apice tantum,

tum, longèque quam in priore minùs evidentè serrata. *Capsula* pallida, valdè reticulata, et, ni fallor, succosa. *Operculum* ferè præcedentis.

7. *H. flabellata*, caule erecto, ramis sparsis pinnatis, foliis distichis complanatis apice serratis.

TAB. XXIII. Fig. 2.

In Indiâ occidentali. 4.

Communicated to the younger Linnæus by Mr. Dickson, as a native of the West Indies, under the name of *Hypnum flabellatum*.

Præcedentibus duabus triplò major, *caule* infernè simplici, foliis arctè vestito, *ramis* flabelliformibus, distichè pinnatis aut bipinnatis, undique foliosis. *Folia* luteo-virentia, pallida, nitida, bifaria, distichè patentia, complanata, verticalia, elliptica, obliqua, apice tantum acutè serrata, ad medium usque uninervia. *Perichætia* sparsa, foliolis lineari-lanceolatis, numerosis. *Pedicellus* perichætio vix duplò longior, basi ruber, apice citrinus. *Capsula* ovata, ferruginea, erecta. *Habitu*, nequaquam verò *peristomio*, *Neckeræ* affinis videtur hæc species.

B. *Rami* portio aucta. C. *Folium* magis auctum. D. Frustulum *peristomii interioris*, maximè auctum.

8. *H. Arbuscula*, caule erecto, ramis sparsis pinnatis, foliis undique imbricatis concavis muticis integerrimis.

TAB. XXIII. Fig. 3.

In Australasiâ. 4.

In New Zealand. Mr. A. Menzies.

Præcedenti magnitudine compar, arbusculiformis, *radice* nigra, villosâ, *caule* infernè simplici, foliis arctè tecto, *ramis* comosis,

Directions for placing the Plates of the Ninth Volume.

TAB. 1. Apion	-	-	-	-	-	to face page	80
2. Cancer floridus, &c.	}						
3. Cancer subterraneus, &c.							
4. Cancer Locusta, &c.							
5. Cancer rubricatus, &c.		-	-	-	-	114	
6. Bulla Hydatis, &c.							
7. Doris longicornis, &c.							
8. Amphitrite Infundibulum							
9. Ursus indicus	-	-	-	-	-	116	
10. Variolaria multipuncta & V. globulifera	-	-	-	-	-	137	
11. Lecidea aromatica & L. atro-flava	-	-	-	-	-	140	
12. Parmelia velata & P. carneo-lutea	-	-	-	-	-	143	
13. Parmelia Clementi & P. Borreri	-	-	-	-	-	147	
14. Lycium rigidum	-	-	-	-	-	153	
15. Lycium tetrandrum	}						
16. Lycium cinereum		-	-	-	-	154	
17. Lycium horridum							
18. Insect that destroys the Wheat	-	-	-	-	-	159	
19. Didelphis cynocephala & D. ursina	-	-	-	-	-	174	
20. Dimorpha grandiflora	-	-	-	-	-	180	
21. Piper quadrangulare & P. bracteatum	-	-	-	-	-	202	
22. Nauclea Gambir	-	-	-	-	-	218	
23. Hookeria	-	-	-	-	-	277	
24. } Notoclea	-	-	-	-	-		
25. }	-	-	-	-	-	294	
26. Edwardsia chrysophylla, Splachnum squarrosum, &c.	}						
27. Neckera sphærocarpa, &c.		-	-	-	-	322	
28. Bryum heterophyllum, &c.		-	-	-	-		

END OF THE NINTH VOLUME.

Directions for placing the Plates of the Ninth Volume.

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